RENEWABLES SECTOR: PHOTOVOLTAICS

♦ UTAH

Renewable Energy Program in National Parks

In 1994, the Utah Department of Natural Resources' Office of Energy and Resource Planning (OREP) established a partnership with the National Parks Service (NPS) in Utah to demonstrate the use of renewable energy and energy-efficient technologies in the Parks and Monuments in Utah. The two primary objectives of the partnership were to reduce the reliance on fossil fuels at National Parks in Utah and to promote the widespread use of renewable energy and energy-efficient technologies when they provide cost-effective alternatives to fossil fuel options. Given Utah's abundant insolation (exposure to sunlight), solar photovoltaic (PV) technology offered great promise as a reliable, renewable energy source for Utah's National Parks.

OREP chose to partner with the National Parks Service because Utah's National Parks provide a number of lucrative opportunities for exploring renewable energy technologies. First, with more than 13 million visitors each year, the parks represent a high-profile opportunity to educate the public about the economic and environmental benefits of renewable energy and energy efficiency. Second, Utah's parks and monuments contain many administrative and visitor sites that are located in remote areas, inaccessible to the region's power grid, requiring the use of expensive diesel generators to provide electricity. Finally, most NPS personnel are enthusiastic about pursuing solar power as an energy alternative because they view solar as paralleling the Park Service's mission and their own conservation ethics.

Three key elements contributed to the program's success. First, OREP aligned itself with a client (the NPS) who had a vested interest in participating in the program. Second, OREP sought and obtained the support of top-level decision-makers responsible for making financial and operational decisions. Offering a least-cost, clean energy system, OREP sold a solution to a problem, connecting the NPS with the people and money that could make the project happen. Third, recognizing that the NPS did not have the resources to devote to becoming renewable energy experts, OREP minimized the time and effort required from the NPS by committing to help maintain and monitor the performance of the new PV systems.

Results:

Cost Benefits	Greenhouse Gas Reductions
$104,500/yr (total energy cost and fuel savings)	185 MTCE*/yr (total from all projects)

At Devil's Garden, in Arches National Monument, four 1.4 kW PV systems (with backup diesel) are supplying electricity to a ranger station, three comfort stations, two campsite hosts, and an amphitheater. Diesel fuel consumption has been reduced from 6,400 to 1,600 gallons/yr, translating to an estimated savings of $16,000 annually. The Maze District Ranger station at Canyonlands is generating electricity from a PV/Diesel hybrid system that is saving the park $13,500 per year. Natural Bridges National Monument is powering its facilties with a 60 kW PV system, saving $34,000/yr. Dangling Rope Marina, at Glen Canyon, has reduced its energy costs by $77,000 by replacing its dirty, noisy diesel generators with a 160 kW PV-propane hybrid system. In addition to cutting greenhouse gas emissions by 185 MTCE* per year, these PV systems have also reduced the National Parks' SOx emissions by 2,300 lbs and cut the NOx emissions by 2,500 lbs annually.

Principal Actors:

The Utah Department of Natural Resources initiated the partnership with National Park Service. NPS partners include Arches National Park, Bryce Canyon National Park, Canyonlands National Park, Capitol Reef National Park, Glen Canyon National Recreation Area, Natural Bridges National Monument, Dinosaur National Monument and Zion National Park. Other partners include the U.S. Environmental Protection Agency's State and Local Climate Change Program, the U.S. Department of Energy, PacifiCorp, ARAMARK SE Services, Inc., Utah Department of Community & Economic Development, William Weyerhauser, and Sandia National Laboratory.

Additional Information:

Jeff Burks, Utah Department of Natural Resources' Office of Energy and Resource Planning, 801-538-5428, nroerp.jburks@state.ut.us; Dave Lochtefeld, Utah Department of Natural Resources' Office of Energy and Resource Planning, 801-538-5443, nroep.dlochtef@state.ut.us.

This case study is based on information provided by Jeff Burks and Dave Lochtefeld, Utah Department of Natural Resources' Office of Energy and Resource Planning.
*Original data have been converted from short tons of CO_2 to Metric Tons of Carbon Equivalent (MTCE).